Volunteer Lake Assessment Program Individual Lake Reports

BLAISDELL LAKE, SUTTON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	448	**Max. Depth (m):**	13.1	**Flushing Rate (yr^{-1}):**	0.3
Surface Area (Ac.):	158	**Mean Depth (m):**	5.2	**P Retention Coef:**	0.86
Shore Length (m):	4,700	**Volume (m^3):**	3,355,500	**Elevation (ft):**	827

TROPHIC CLASSIFICATION

Year	Trophic class
1990	OLIGOTROPHIC
2005	MESOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

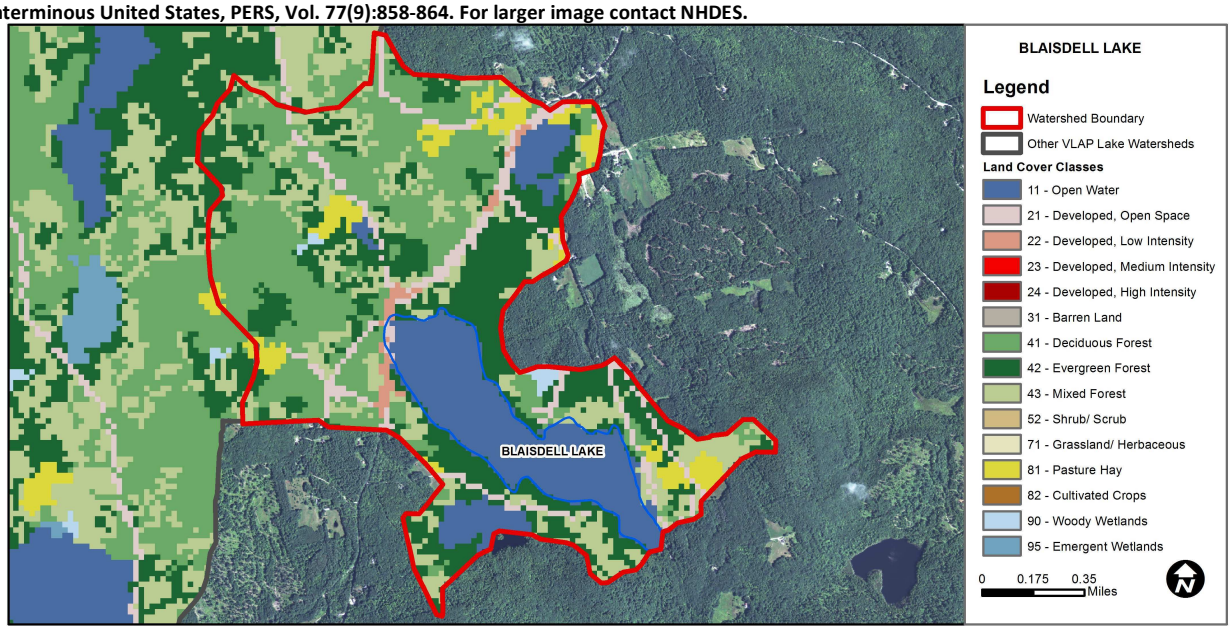
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

BLAISDELL LAKE - CAMP WABASSO BEACH	Escherichia coli	Good	There are geometric means and all geometric means are < geometric mean criteria; and there has been a single sample exceedance.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	17.9	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	6.52	Deciduous Forest	27.53	Pasture Hay	5.02
Developed-Low Intensity	1.15	Evergreen Forest	25.92	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	15.65	Woody Wetlands	0.49
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0

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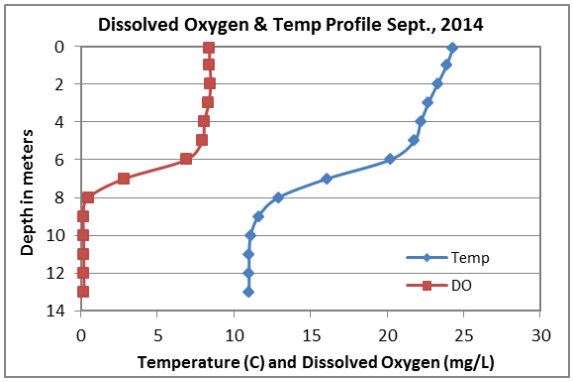
Blaisdell Lake, Sutton

2014 Data Summary

Observations and Recommendations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were low in June, increased to average levels in July and then decreased to low levels in September. The 2014 average chlorophyll level was less than the state median and historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- **Conductivity/Chloride:** Deep spot and tributary conductivity levels, except for Russell Pond, were slightly greater than the state median but within an average range. Russell Pond conductivity was slightly elevated and greater than the state median. Historical trend analysis indicates relatively stable epilimnetic (upper water layer) conductivity with moderate variability between years.
- **E. coli:** Wrights Beach E. coli levels were very low and much less than the state standard of 88 cts/100 mL for public beaches on the July sampling event.
- **Total Phosphorus:** Epilimnetic and Metalimnetic (middle water layer) phosphorus levels were low and much less than the state median on each sampling event. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Hypolimnetic (lower water layer) phosphorus was low in June and July but slightly elevated in September. The turbidity of the hypolimnion sample was also elevated in September suggesting either bottom sediment in the sample or the accumulation of organic compounds in the hypolimnion when dissolved oxygen levels decrease to less than 1.0 mg/L, as was the case in September. Billings Pond phosphorus was slightly elevated in July and organic matter was noted in the sample. Brown Inlet, Billings Inlet, Bum Carter Cove, Outlet, and Russell Inlet phosphorus levels were low on each sampling event. North Shore Trib. and Russell Pond phosphorus levels were slightly elevated in July potentially due to low flow conditions.
- **Transparency:** Transparency was very good in June and decreased to average levels in July and September, and the 2014 average was much better than the state median. Transparency measured with the viewscope (VS) was generally better than measured without and likely a better representation of actual conditions. Historical trend analysis indicates significantly increasing (improving) transparency since monitoring began. We hope to see this continue!
- **Turbidity:** Epilimnetic and Metalimnetic turbidities were low on each sampling event. Hypolimnetic turbidity increased as the summer progressed potentially due to the accumulation of organic compounds under anoxic conditions. Generally, tributary turbidities were low with the exception of the July sampling event when water levels and flow were likely lower.
- **pH:** Deep spot and tributary pH levels fluctuated below the desirable range of 6.5—8.0 units and historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH since monitoring began.
- **Recommended Actions:** Overall, water quality looks good and the improving transparency is a great sign, and although not significant trends, epilimentic phosphorus and chlorophyll levels also are trending downward (improving). Keep up the great work!



NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: > 230 mg/L (chronic)

E. coli: > 88 cts/100 mL – public beach

E. coli: > 406 cts/100 mL – surface waters

Turbidity: > 10 NTU above natural level

pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m^3

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

Station Name	Table 1. 2014 Average Water Quality Data for BLAISDELL LAKE								
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	7.93	3.11	60.7		6	5.94	6.20	0.68	6.67
Metalimnion			61.1		6			0.93	6.46
Hypolimnion			65.7		10			4.87	6.24
Billings Inlet			61.2		5			0.52	6.65
Billings Pond			41.2		10			1.10	6.44
Brown Inlet			61.9		7			1.01	6.68
Bum Carter Cove			61.8		5			0.54	6.73
North Shore Trib.			62.3		7			0.60	6.65
Outlet			61.3		5			0.42	6.68
Russell Inlet			61.9		6			0.56	6.89
Russell Pond			130.2		10			1.37	7.03
Wrights Beach				1					

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Worsening	Data significantly decreasing.	Transparency	Improving	Data significantly increasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.